

WHAT IS CLAIMED IS:

Sub A 1
1. An isolated nucleic acid encoding a vertebrate translation initiation factor
2. 4AIII (eIF-4AIII) having an amino acid sequence substantially homologous to that of
3. SEQ ID NO:2.

Sub A 1
1. 2. The isolated nucleic acid of Claim 1 wherein the amino acid sequence is SEQ
2. ID NO:2 or SEQ ID NO:2 with a conservative amino acid substitution.

Sub A 1
1. 3. The isolated nucleic acid of Claim 2 wherein the nucleic acid contains the
2. coding sequence of SEQ ID NO:1.

Sub A 1
1. 4. The isolated nucleic acid of Claim 1 further comprising an heterologous
2. nucleotide sequence.

Sub A 1
1. 5. The isolated nucleic acid of Claim 4 wherein the heterologous nucleotide
2. sequence encodes a fusion protein or fusion peptide.

Sub A 1
1. 6. The isolated nucleic acid of Claim 1 operatively linked to an expression
2. control sequence.

1. 7. A unicellular host transformed or transfected with the nucleic acid of Claim 6.

1. 8. A method of expressing the eIF-4AIII comprising culturing the unicellular host
2. of Claim 7 in an appropriate cell culture medium under conditions that provide for
3. expression of the protein by the cell.

1. 9. The method of Claim 8 further comprising the step of purifying the eIF-4AIII.

1. 10. The purified form of the eIF-4AIII obtained by the method of Claim 9.

1 11. An isolated nucleic acid containing 15 or more nucleotides that hybridizes to
2 SEQ ID NO:1 under standard hybridization conditions.

Sub A 3
1 12. The isolated nucleic acid of Claim 11 that hybridizes to nucleotides 1 to 90 of
2 the coding region of SEQ ID NO:1 under standard hybridization conditions.

1 13. An isolated vertebrate translation initiation factor 4AIII (eIF-4AIII) having an
2 amino acid sequence substantially homologous to that of SEQ ID NO:2.

1 14. The isolated eIF-4AIII of Claim 13 having the amino acid sequence of SEQ ID
2 NO:2 or SEQ ID NO:2 with a conservative amino acid substitution.

1 15. The isolated eIF-4AIII of Claim 13 containing the amino acid sequence of
2 SEQ ID NO:4.

1 16. The isolated eIF-4AIII of Claim 13 having a detectable label.

1 17. A proteolytic fragment of the isolated eIF-4AIII of Claim 13.

1 18. A chimeric protein comprising a fusion protein or peptide and the proteolytic
2 fragment of Claim 17.

1 19. A chimeric protein comprising a fusion protein or peptide and an eIF-4AIII
2 having an amino acid sequence substantially homologous to that of SEQ ID NO:2.

1 20. An antibody to an isolated vertebrate translation initiation factor 4AIII (eIF-
2 4AIII) having an amino acid sequence substantially homologous to that of SEQ ID
3 NO:2.

1 21. The antibody of Claim 20 that binds amino acids 1-30 of SEQ ID NO:2.

1 22. The antibody of Claim 21 which is a monoclonal antibody.

1 23. A method for identifying a potential drug that modulates the ability of the eIF-
2 4AIII of Claim 13 to induce the transcription of epidermal markers comprising:
3 (a) injecting an mRNA encoding the eIF-4AIII into an animal pole of a 2-
4 cell stage embryo in the presence of an agent;
5 (b) isolating the animal pole explant at the late blastula stage;
6 (c) culturing the animal pole explant until the midneurula stage;
7 (d) extracting the RNA from the animal pole explant;
8 (e) assaying for the transcription of an epidermal marker protein; and
9 (f) comparing the amount of transcription in the presence of the agent
10 relative to in its absence; wherein an agent that enhances or diminishes said
11 transcription relative to in its absence is identified as a potential drug that modulates
12 the ability of the eIF-4AIII to induce the transcription of epidermal markers.

1 24. The method of Claim 23 wherein said assaying the transcription of the
2 epidermal marker is performed by reverse transcriptase polymerase chain reaction.

1 25. The method of Claim 23 wherein the 2-cell stage embryo is a *xenopus* embryo.

1 26. The method of Claim 23 wherein the animal pole explant is dissociated for 2-6
2 hours and then reaggregated prior to said culturing of step (c).